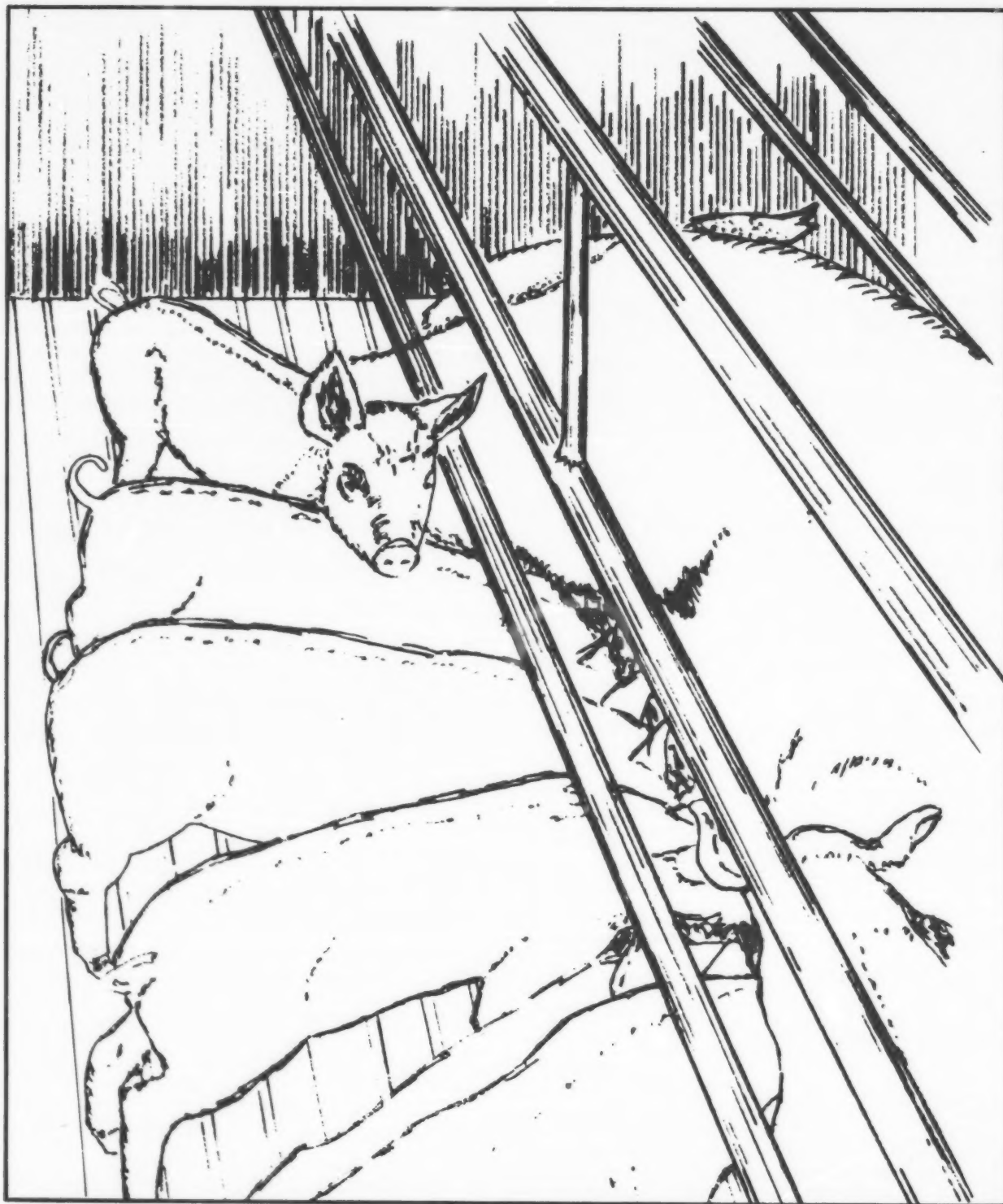




Saskatchewan
Agriculture

Introduction to Swine Production



**Introduction to
Swine Production**

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Introduction

A hog enterprise can offer opportunities for farm diversification, increased farm employment and farm income. The type of hog enterprise established must match the goals of the present farm. The short-term goal of marketing excess grain and improving cash flow favors a low investment in facilities. The long-term commitment to hog production favors the development of a high technology operation; this includes detailed planning of the facility and the development of managerial and labour expertise.

Training, Labour and Management

Successful hog production requires a high level of expertise, gained through experience and formal study. New producers should attend hog management courses, such as those offered by Wascana Institute, combined with practical work experience on a modern hog farm. Producers whose present farm commitments limit off-farm training should start with a small operation, attend seminars and expand to match experience gained.

The labour and management of the hog enterprise must be compatible with demands from other operations on the farm. For example, there must be an operation plan to keep management in a feeder barn efficient during seeding and harvest on a grain operation. More than one person should be knowledgeable in the hog operation. This could be a family member or part-time help.

Location and Environmental Concerns

Factors to consider when picking a new hog operation site are:

- ensure adequate water quality and quantity
- select a well-drained site, avoid low areas or areas with a high water table
- choose impervious soils to reduce groundwater contamination
- consider prevailing winds and the location of nearby homes to minimize air pollution and conflicts with neighbours
- allow room for expansion, as most successful enterprises tend to grow
- ensure both electrical and natural gas supply can be provided economically
- all-weather roads are required for moving pigs, feed and manure



A permit under The Pollution (By Livestock) Control Act may be required before construction of new facilities can begin. The requirement of a permit serves to protect a farmer's investment, reduce nuisance factors and eliminate any potential environmental damage. Contact your regional Agricultural Engineer to determine whether a permit is necessary for the facilities being planned.

Types of Operations

There are three basic types of hog enterprises; feeder, farrow-weanling and farrow-to-finish; each with varying labour, management and facility requirements. The first thing a producer must decide is what type of operation is desired and what volume of production will be required.

Feeder Operation

A feeder operation buys weanlings or feeder hogs up to 20 to 25 kg and feeds them to market weight of 105 kg.

A typical feeder barn is either 36 ft. wide with a 3 ft. wide centre feeding alley and an outside pit along each wall, or 40 ft. wide with a 2.5 ft. wide alley along each outside wall with a centre manure pit. The pen size is 6 ft. by 16 ft. to 17 ft., with one-third of the total area slatted. These pens can handle 20 growers or 10 finishers. A rule of thumb is to allow 7 square feet of pen space for each feeder pig in the barn.

A typical feeder barn has a 300 to 500 hog capacity. One person requires three to four hours per day for pen checking, treatments, marketing, weighing and washing in operating a barn of this size.

Farrow-Weanling Operation

A farrow-weanling operation concentrates on breeding herd management and sells weanlings or feeder hogs to feeder barn operators. One person can handle about 90 sows as a full-time eight hour per day job.

Typical existing floor arrangements for a farrowing room are based on two rows of 5 ft. by 7 ft. farrowing crates facing a central feed alley. New crates are often 6 ft. wide, because of larger litter sizes. One farrowing crate is allowed for every four sows in the herd.

The operator must choose between operating an all in-all out system or a continuous flow system. In an all in-all out system, each room is occupied by sows and litters which are at the same point in the production cycle. Typically, each room contains from six to 10 farrowing crates. The rooms are emptied and cleaned between batches of sows to prevent disease buildup. Producers farrowing less than 250 litters per year may find the added cost for separate ventilation and manure handling systems, extra partitions and alley space prohibitive.

A producer can often switch from continuous to all in-all out as he expands. This must be allowed for at the initial planning process.

Nursery facilities must be designed so that they are warm, dry and free from drafts. Separate nursery facilities are preferred to raising weanlings in the farrowing barn or finishing barn. With a separate nursery, the all in-all out concept is better than continuous flow. Raised weaner decks are recommended. Allow 2.5 square feet of pen space per pig. Generally, a 4-ft. by 8-ft. weanling deck is required for every two farrowing crates in the barn.

The breeding herd can be housed either outdoors or indoors. For outdoor sow housing, allow 8 square feet per sow in a well-bedded shelter and 80 square feet per sow in the outdoor pen. The sows should be grouped according to the number of farrowings required per week for ease of handling. For indoor sow housing, allow 15 to 20 square feet per sow in pens (maximum of six per pen) or confine the sows in individual stalls (2 ft. by 7 ft.). Feeding is generally done on a limit feed basis. To maximize the reproductive performance of the sows, it is essential to allow some space for individual controlled mating. Controlled mating improves conception rates, increases litter size and improves cycle control, compared to pasture mating.

Farrow-to-Finish

A farrow-to-finish operation finishes all the hogs produced from the breeding herd. All the facility components of a breeding herd barn, farrowing and nursery barn, plus a feeder barn are required for this operation. As a rough rule of thumb, one person can successfully manage a 70 sow farrow-to-finish operation as a full-time eight hour per day occupation. When sizing a feeder barn for a farrow-to-finish operation, plan on producing 18 pigs per sow per year (don't budget on this level of production, however) and assume that the barn will turn over two and a half times per year. In other words, a 50 sow herd would produce 900 pigs per year and the feeder barn should be sized to handle 360 pigs.

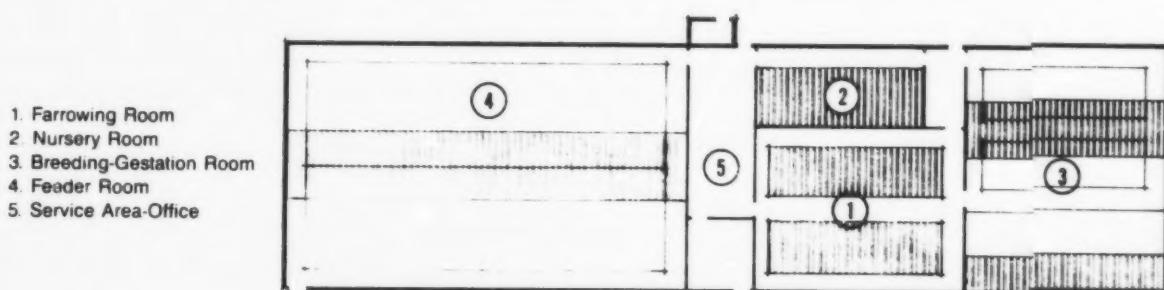
When planning the facility, be sure to allow for possible future expansion. Flow patterns for hogs, feed and manure must be considered so that each is handled with a minimum of labour and expense. Such things as breeding management and record keeping are much more important than manual labour jobs such as cleaning and feeding. Therefore, avoid adding labour intensive systems.

Existing Facilities

Sometimes an existing facility such as an old hog or dairy barn can be successfully remodelled into a swine facility. It is extremely important to carefully evaluate these old structures before deciding if remodelling will be a good investment. In most cases, the renovation costs are more than a new building of similar capacity. There are three main reasons for this.

1. Renovated buildings almost always have lower animal densities, increasing the capital cost per animal housed. Existing posts and alleys, etc. waste space.
2. Renovations frequently require removal of old material, which escalates labour costs.
3. Renovations seldom go smoothly. Unforeseen problems often arise after the renovation has started, which can have significant effect on the capital cost.

Floor Plan for plan S-314, 30 to 50 sow farrow-to-finish hog barn





The facility should not be renovated if:

- the building is not structurally sound
- the building has such problems as a cracked foundation, sagging roof, leaning walls or rotted joists
- the renovated facility will not function as well as a new facility
- pig, manure and feed flow patterns are not as required
- the renovated facility will not provide adequate flexibility for expansion

Ventilation and Heating

Ventilation and heating systems in a swine barn provide a suitable environment for the pigs. Ventilation systems remove moisture, heat and gases and provide fresh air for the pigs. In winter, ventilation removes excess moisture produced by the animals. In the summer, ventilation removes excess body heat. Heating systems provide the desired temperature level for healthy growth of the pigs.

The ventilation and heating systems must be designed as a unit for an individual building, based on animal numbers and insulation values. Obtain professional advice from your regional Agricultural Engineer to ensure that the heating and ventilation system are properly designed for the building being considered.

Stock Selection

Selection of stock for a swine enterprise should be based on economic traits. These include health status, reproductive performance, growth rate, feed efficiency and carcass quality. Suppliers should provide accurate records on these traits. Breed selection for gilts for a breeding herd should be based on mothering ability and reproduction. Sire selection for production of feeder hogs should stress growth rate, feed efficiency and carcass quality.

Herd health status has a major influence on productivity and profitability. Suppliers of breeding stock and feeder hogs should be part of a herd health program supervised by a veterinarian. Your veterinarian can assist you in selection of stock.

Feeding and Nutrition

Feeding balanced rations is necessary for good performance. Producers have the option of processing rations on the farm or purchasing a complete ration from a commercial mill. Cereal grains, peas, lentils or canola can be supplemented with soybean meal, canola meal, commercial supplements or premixes purchased from feed suppliers. Rations that are difficult to formulate on the farm such as milk replacers, starters and some sow rations are purchased. New producers should consider purchasing complete rations to reduce initial capital costs and to allow more time for improving herd management skills.

The following is an estimate of barley, supplement and starter required for various classes of hogs.

Hog Type	Barley	Supplement	Starter
Sow (including boar feed) (per year)	916 kg	150 kg	
Weanling (per hog) (10 kg to 22 kg liveweight)			32 kg
Feeder (per hog) (22 kg to 105 kg liveweight)	260 kg	50 kg	

On-farm formulating is done with either portable power take-off (PTO) grinder-mixers or with stationary electric grinder-blenders. PTO grinder-mixers have higher operating and maintenance costs but can be used to process high roughage rations for other livestock. Electric grinder-blenders grind and mix continuously and provide more consistent feed quality. They are slower than PTO mills but can run unattended. Feed processing time is dependent on type of operation, equipment and ingredients used. Typical feed processing times for various types of swine enterprises are:

50 sow farrow-to-finish	360 hours per year
50 sow weanling operation	140 hours per year
500 head capacity feeder barn	300 hours per year

Construction Costs

The costs to build and equip facilities varies greatly, depending on such things as size of operation, new versus used equipment, amount of contracted labour and level of existing services in the yard. Generally, as facilities get larger, the cost per sow housed decreases. The following guidelines will help estimate the capital requirements:

Farrow-to-Finish Operation

\$2,500 - \$3,000 per sow, indoor sow housing

\$2,000 - \$2,500 per sow, outdoor sow housing

Feeder or Breeding Barn with Equipment

\$18 - \$22 per square foot

Farrowing or Nursery Barn with Equipment

\$25 - \$30 per square foot

Farrowing and nursery facilities are more expensive because of the extra equipment required.

Estimated Capital Costs - 50 Sow Unit (based on Plan S-314, 5472 ft.², turn-key)

Buildings and Equipment	Total	Cost/Sow
Breeding - Gestation (1368 ft. ²)	\$ 30,100	\$ 602
Farrowing-Weaning (1296 ft. ²)	38,900	778
Finish (2448 ft. ²)	53,900	1,078
Miscellaneous*	47,460	951
	\$170,460	\$3,409

* Miscellaneous items include:

Feed - 8,000 bushel storage, feed room, grinder-mixer, two 7 ton feed bins, augers, carts, etc.

Manure - pump and spreader, long-term storage

Water - well, pump

Utilities - electricity, natural gas, telephone

Do not assume that once the concrete is poured and the shell is erected, insulated and painted that the barn is complete. Generally, the floors, walls and roof with insulation, siding inside and out costs from \$7 to \$10 per square foot. The rest of the costs are equipment, wiring, plumbing, ventilation, lighting and feed systems. Labour accounts for roughly 30 to 40 per cent of the facility's total construction costs (excluding electrical and plumbing costs).

Records

Records are needed to make management decisions. The record system should describe present production and financial situation and provide indicators to improve performance. The complexity of the records will vary with the size and type of operation.

Feeder hog records may identify lots by source, health, days on feed, feed conversion and market index. A breeding herd would have individual sow and boar records. Reproductive performance that measures conception rates, litter size, piglet mortality, litters per year, pigs weaned and boar records are needed for decision making. The Saskatchewan Pork Producers Marketing Board (SPPMB) has record keeping systems for hog enterprises.

Financial records are necessary to plan expansions, meet debt payments and evaluate the financial situation of the hog operation.

Financing

When looking for financing, farm managers should plan their credit management carefully and discuss their requirements with their credit managers before making decisions. Shop for financing in the same manner as shopping for a new tractor and do business with the financial institution that gives the best terms and service. Credit is viewed as a tool of production, just as machinery and equipment are considered tools. If wisely used, credit can do a good job of increasing profits and expanding farm resources.

Short-term cash flow projections should at least cover all the cash costs; while in the long-term all costs have to be covered to ensure longevity of the enterprise. After these detailed examinations, a better judgment decision regarding the feasibility of the enterprise can be made.

Refer to the Saskatchewan Agriculture Economics Branch publication Swine Economics for more information on investment costs, income and expenses, and cash flow projections.

Pig and feed prices can vary greatly and tend to cycle over a period of time. Both current and historical prices should be checked when doing projections on income, expenses and cash flows to ensure realistic numbers are used. This data is available from a wide variety of sources such as the Saskatchewan Agriculture regional Farm Management Specialists, the Saskatchewan Agriculture Livestock Branch Swine Unit and the Saskatchewan Pork Producers Marketing Board in Saskatoon. Other sources are various lending institutions, feed companies and swine industry consultants. Many of these sources also have computer programs available that can be of great assistance in doing financial analysis on proposed hog operations.

Production Assumptions

Deduct

Gilts retained for breeding

_____ pigs

1. Feed _____ tonnes x \$ _____ /t

Grower and Finisher Ration

Boars _____ at \$ _____

4. Maintenance and repair on buildings and equipment

5. Utilities and insurance

6. Veterinary and medicine

7. Marketing and transportation

8. Interest on cash costs

Non Cash Costs

9. Owner's labour/management

10. Depreciation on buildings and equipment

11. Interest on investment

Total Costs

hogs x kg x \$ /kg

SOWS x kg x \$ /kg

boars x	kg x \$	/kg
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Total Income minus Total Costs

**Cost
Per Sow**

Cost Per Market Hog

Marketing

Swine producers in Saskatchewan have the option of joining the National Tripartite Stabilization Program. This marketing program collects levies from both federal and provincial governments, as well as producers, and in return ensures producers a minimum price for their slaughter hogs. All slaughter hogs sold in Saskatchewan are marketed through the Saskatchewan Pork Producers Marketing Board, which administers the Stabilization Program. For more information contact the Marketing Board.

Farrow-weanling operators can market their animals privately or through marketing co-ops such as the Swine Improvement Services Co-op (SISCO) 609 MacDonald Road, Melfort S0E 1A0 (752-9367). Private arrangements should include a weanling pricing agreement that would tie into the market stabilization program for slaughter hogs.

Professional Advice

Many aspects of planning and constructing a swine facility have been discussed. Planning assistance and barn plans are available from the regional Agricultural Engineer, Livestock Specialist and Farm Management Specialist. Be sure to contact these people before beginning your hog operation.

Sources of Further Information

Saskatchewan Agriculture, Extension Service District Offices
Agricultural Representative

Saskatchewan Agriculture, Extension Service Regional Offices
Agricultural Engineer
Farm Management Specialist
Livestock Specialist

Saskatchewan Agriculture, Livestock Branch Swine Unit
2nd Floor, 502 - 45th Street West, Saskatoon S7L 6H2
Toll Free 1-800-667-6862

Saskatchewan Pork Producers Marketing Board
2nd Floor, 502 - 45th Street West, Saskatoon S7L 6H2
653-3014 or Toll Free 1-800-667-2003

Agricultural Credit Corporation of Saskatchewan
Box 820, 250 Central Avenue North, Swift Current S9H 3W8
Toll Free 1-800-667-7410

Saskatchewan Agriculture, Economics Branch
329-3085 Albert Street, Regina S4S 0B1

Saskatchewan Agriculture, Veterinary Branch
4840 Wascana Parkway, Regina S4S 0B1

University of Saskatchewan, Feed Testing Laboratory
Saskatoon S7N 0W0

University of Saskatchewan, Prairie Swine Centre
Saskatoon S7N 0W0

Veterinary Infectious Diseases Organization (VIDO)
University of Saskatchewan, 124 Veterinary Road,
Saskatoon, Sask. S7N 0W0

Wascana Institute, Agricultural Division
PO Box 556, Regina, Sask. S4P 3A3
787-4003

Agricultural Credit Corporation of Saskatchewan - Hog Incentives

Assistance Provided:

Producers can receive a one-year, interest-free cash advance of \$25 per hog on 70 per cent of the herd. In addition, the Agricultural Credit Corporation of Saskatchewan provides low-interest loans for livestock facilities. The interest rate is eight per cent for the term of the loan.

To apply or for further information contact:

Local Agricultural Credit Corporation of Saskatchewan,
agricultural representative or rural municipality offices

or

Agricultural Credit Corporation of Saskatchewan
Box 820, 250 Central Avenue North
Swift Current S9H 3W8
Phone: 1-800-667-7410 (toll free)

Livestock Investment Tax Credit

Assistance Provided:

Saskatchewan taxpayers receive a provincial tax credit for livestock fed in the province. The tax credits are \$3 per head for slaughter hogs.

To apply or for further information contact:

Livestock Investment Tax Credit
Saskatchewan Agriculture
3085 Albert Street
Regina S4S 0B1
Phone: 787-5957

Livestock Facilities Tax Credit

Assistance Provided:

A 15 per cent tax credit is available to all individuals and corporations resident in Saskatchewan who have acquired eligible facilities on or after January 1, 1986.

To apply or for further information contact:

Livestock Facilities Tax Credit
Saskatchewan Agriculture
3085 Albert Street
Regina S4S 0B1
Phone: 787-5957

Shows and Seminars

Anyone interested in meeting other swine producers and learning more about the latest swine production techniques should attend the two major swine industry events held in Saskatoon each year.

Swine Design - a swine industry trade show held every March

Swine Symposium - a swine industry seminar held every November